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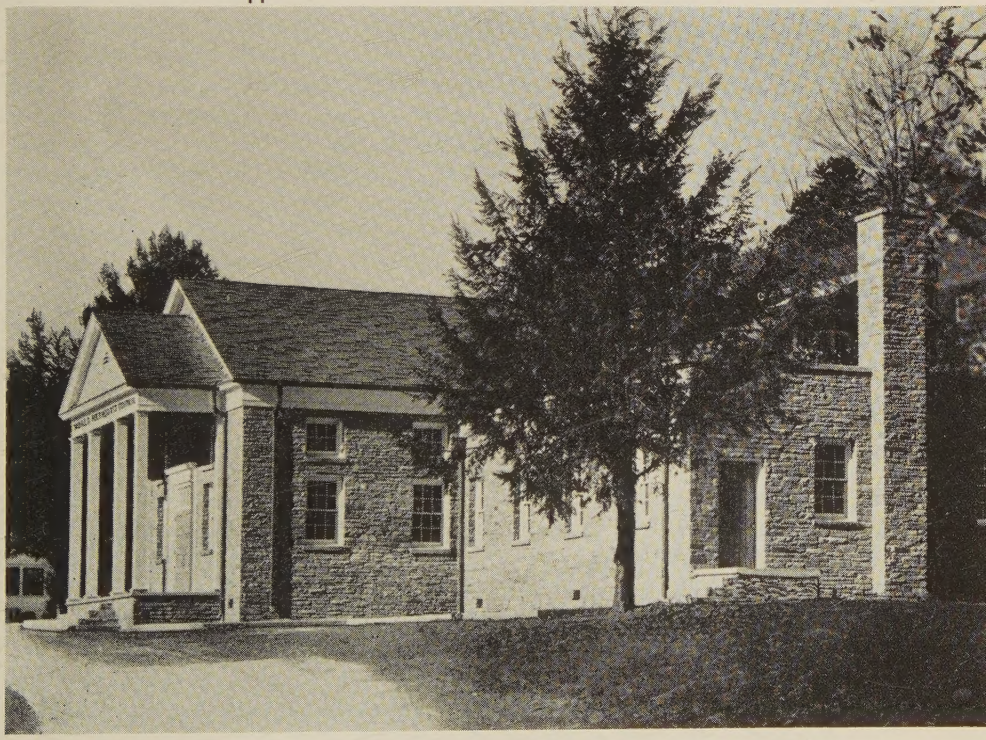

The World Methodist Building
Lake Junaluska
North Carolina, U.S.A.

CHURCHES AND SEGREGATION

The Ninth World Methodist Conference, just concluded, has made a sound contribution to the cause of racial non-discrimination. Not only in its actions, which were unique, but also in its final resolution its word went out to a membership of 18,000,000 that the church's weight was to be thrown consistently against any discriminations in the society based on race, color or creed.

This resolution came at a dramatic time and its setting was dramatic. The conference met in North Carolina under conditions of complete racial equality. The significance, however, is deeper and more far-reaching than the present immediate background.

What the church group was doing was to make it plain that the problem of racial discrimination and race bias is essentially a moral and religious problem for all those who are devout. This is important, because it gives hope of the basis upon which the problem can ultimately be solved.

Present tensions in parts of our country arise primarily out of a legal aspect of the problem. Our courts have made a ruling designed to bring some of our social practices into line with our constitutional law. How that ruling can be applied has given rise to local situations that are spectacular and deplorable. This application is complicated by group patterns of behavior, by long-standing prejudices and, in many cases, by honest conviction that this attempt to interpret and enforce constitutional law, at this time and in the given places, is unwise and unwarranted.

What the church resolution does, on the other hand, is to put the whole question in a broader group of concepts and to take it out of problems of legality and expediency and into the field of morals. A majority of Americans, we believe, think that this is where it belongs, since it concerns, ultimately, the attitude of human beings toward one another. And since religious belief is the usual basis for our concepts of morals the question enters the field of religion.

For this reason not only the Methodists but also other religious bodies have spoken out on the issue. They are right to do so. They have, indeed, an obligation to do so if what is involved is real moral leadership.

This knotty problem of school segregation—merely illustrative of a wider and deeper problem—cannot be solved by legislation alone or by militancy of enforcement. Changes must take place in the hearts and minds of men if the right way is to be found. It should be the proper function of our spiritual leaders to indicate the need for those changes and some of the ways in which they can be made.

Editorial in

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Ninth World Methodist Conference

The Ninth World Methodist Conference at Lake Junaluska, North Carolina, U.S.A., was probably attended by the largest number of Methodist world leaders that ever assembled. The officially accredited personnel numbered around one thousand, to which should be added an equal number of visitors from the American churches. The Conference was immediately preceded by the meeting of the World Federation of Methodist Women, which was attended by approximately four hundred persons, most of whom remained for at least a portion of the World Methodist Conference.

The program was of a high order. There were addresses by Methodist leaders from many nations, daily services of Holy Communion, and a dozen daily discussion groups which conducted forums on the addresses being delivered.

The overseas guests attended the Cherokee Indian drama, "Unto These Hills," enacted on the Reservation of the Cherokee Indians near Lake Junaluska. They also visited the reconstructed aboriginal Oconoluftee Village as guests of the tribe, in connection with which Dr. Harold Roberts, Dr. E. Benson Perkins, and Sir Frederick Stewart of Australia were made honorary members of the tribe in colorful ceremonies.

The Conference was covered by a large contingent of press representatives. The result was a volume of publicity which blanketed America and spread around the world. America's most famous newspaper, *The New York Times,* printed a daily dispatch about the Conference, published the Message in full, and published an editorial which is reproduced elsewhere in this bulletin.

An important feature of the Conference was the assignment of numerous visiting preachers to churches in various parts of the country. One hundred and seventy such preaching appointments were made. Sunday, September 9th, was designated as World Methodist Sunday, and preachers were sent to twenty-five cities and towns within reach of the seat of the Conference.

At the final Plenary Session of the Conference, Wednesday, September 12, honorary degrees were conferred on fifteen persons by American colleges. The persons receiving academic honors were as follows: W. E. Sangster, Doctor of Laws; R. B. Lew, Doctor of Divinity; E. Benson Perkins, Doctor of Laws; Arthur R. Hill, Doctor of Laws; Walter J. Noble, Doctor of Divinity; Albert Holland, Doctor of Divinity; Frank H. Cumbers, Doctor of Divinity; H. Crawford Walters, Doctor of Divinity; Bishop Ferdinand Sigg, Doctor of Divinity; Bishop Odd Hagen, Doctor of Divinity; Matthew A. McDowell, Doctor of Divinity; Stanley B. Sudbury, Doctor of Divinity; Harold Roberts, Doctor of Divinity; Dorothy Farrar, Doctor of Letters; Maldwyn L. Edwards, Doctor of Divinity.

It was announced that degrees were conferred elsewhere as follows: Frank O. Salisbury, Doctor of Fine Arts; Bishop Sante Uberto Barbieri, Doctor of Laws; Eric Baker, Doctor of Divinity; Stanley Leyland, Doctor of Divinity; Ronald V. Spivey, Doctor of Divinity; Bishop Friedrich Wunderlich, Doctor of Divinity; Gabriel Sundaram, Doctor of Divinity; Mongol Singh, Doctor of Divinity.

Another special feature was the four-day Historical Caravan which transported one hundred and twenty overseas visitors from Lake Junaluska to New York. The sightseeing buses travelled northward on the scenic Blue Ridge Parkway, with stops at Harrisonburg, Virginia, Washington, D. C., Baltimore, and Philadelphia, where points of Methodist historic interest were visited. On Sunday, September 16, there was a special service at St. George's Church in Philadelphia, oldest Methodist church building in America, with Dr. Harold Roberts, President of the World Methodist Council, as the preacher. In the evening there was a similar service at John Street Church in New York, the oldest Methodist society in America.

A high point was the reception of the party by the President of the United States in the Rose Garden of the White House on the afternoon of Friday, September 14. The President was introduced personally to a number of persons, after which he made a brief address to the whole party. Dr. Harold Roberts responded.

Actions of the Conference

The official documents and all the addresses of the Conference will be published in the forthcoming volume of Proceedings. The Message of the Conference to the Methodists of the World, the Constitution, and the new officers and committees elected are published elsewhere in this bulletin. In connection with the Conference there were various meetings of the World Methodist Council and the World Executive Committee. Among the actions the following should be mentioned:

1. Steps were taken to bring the Epworth Old Rectory into the ownership and control of the World Methodist Council and maintain it as a world shrine of Methodism. A Board of Managing Directors was

appointed and provision was made to raise a fund of $35,000.00 for needed repairs and equipment, and to provide also a Living Endowment for future maintenance. Responsibility was also accepted for a share in the cost of the restoration and maintenance of the boyhood home of Francis Asbury.

2. The World Federation of Methodist Women became officially an affiliated organization of the World Methodist Council.

3. Endorsement was given to the publication of a Quarterly Journal for World Methodism. This project was committed to the World Executive Committee with power to proceed if financial arrangements can be made.

4. Observance of the 250th Anniversary of the birth of Charles Wesley was projected, in cooperation with various Hymn Societies and Methodist Historical Societies of the world.

5. An invitation to the World Executive Committee to meet in Rome in May or June, 1957, was accepted.

A MESSAGE TO THE METHODISTS OF THE WORLD FROM THE NINTH WORLD METHODIST CONFERENCE

(To be read in the Churches.)

I

The World Methodist Conference, meeting at Lake Junaluska, North Carolina, U. S. A., in September, 1956, sends greetings to Methodists everywhere in the name of Jesus Christ, their Lord and ours. The Conference represents a world membership of more than 18,000,000 people and a Christian community several times that figure. Forty-four nations, from all five continents, have been represented at its meetings, and without discrimination or hindrance, have shared fully that fellowship in Christ which is the cherished privilege of His disciples. The Conference believes that the increasing interest in World Methodism amongst our people and the strengthening of the links between its many members, are an enrichment of the Methodist Church as a whole, and will be a means of enabling it, as a branch of the Holy Catholic Church, to bring to the work of Christian reunion its most valuable contribution. Yet that contribution will not be fully effective until Methodist theologians and preachers study and set forth those aspects of Christian theology on which Methodism has an especial duty to speak, including the doctrines of the Holy Spirit and of perfect love. We should clarify our own teaching in respect of the Christian ministry and the doctrine of creation (particularly in relation to science and the arts).

II

The theme of the Conference was, "Methodism in the Contemporary World." Our concern for the urgent problems of our time springs directly from our knowledge of God's redemptive purpose for mankind, now in so many ways hindered by the rebellion of sinful men, by their devotion to the gods of secularism, extreme nationalism, oppressive imperialism or totalitarianism, and by a wide-spread disintegration of personal moral standards. But we believe this divine purpose stands sure. It was declared in the incarnation, life, death, and resurrection of our Lord Jesus Christ. It has been manifested through the ages in the continual activity of the Holy Spirit in the life and work of the Church. It is evident today in the virility and the courageous witness of countless Christians, not least in the churches of more recent origin.

III

The Church is called to a righteousness rooted in the Gospel of redeeming love. That Gospel is not to be identified with specific social or political programs; benevolence must not be made a substitute for faith, or social zeal an escape from the searching personal demands of our Lord. The Christian must so live within the present situation in personal and family conduct, in business, social, and political action, that the Holy Spirit may work through him for the fulfillment of God's design for man.

IV

The Conference, composed of representatives from many nations and ethnic groups united in fellowship in Christ, deplores the embittered strife which bedevils human relations. The Conference is entirely convinced that the Church is committed by its very nature to the establishment of a human society in which discrimination based on race or color will no longer exist. The Conference expresses its active concern for those of any color or race who are suffering from political, economic, educational, social, or religious discrimination, or segregation, and the earnest desire that Methodists themselves will initiate, contend for and foster, within their own Societies, a genuine and all-inclusive fellowship.

V

The first duty of the Christian in relation to peace and war is to understand and help to remove the underlying causes of war. While peoples in various parts of the world are forced to endure a lower standard of life than those of more advanced countries, the danger of war is always present. It is increased in our time by the growing threat to human liberty in many places, and by the wide-spread denial of human rights and of the value of human personality. When men and nations are actuated by greed and the love of power they are scarcely prevented from taking advantage of the situation, even by the fear of nuclear weapons. The Conference urges Methodists everywhere, not

only in order to avoid war but because God wishes all men to have equal opportunities for a full life, to work for the improvement of inadequate living conditions, to uphold the cause of truth, liberty and justice to the utmost of their power, to care for refugees and displaced persons and all who are oppressed, and to foster all that leads to reconciliation and trust between nations. It also calls on them to support every attempt to secure a reduction of the crippling burden of armaments, and in particular the cessation of the development of nuclear power for purposes of war.

VI

The Conference affirms the Lordship of Christ over every aspect of human life and thought. In that spirit it welcomes wholeheartedly the increase of men's knowledge of the universe, and also new expressions of the faith in terms of poetry, drama and the arts. For our growing scientific knowledge not only displays with increasing fullness the splendour of God's creative energy, but lays upon us a solemn obligation to see that it is used, on the widest scale possible, to build a satisfying and abundant life for all the peoples of the earth. There are given to our generation new possibilities of this kind undreamt of by previous generations. And the work of Christian poets and dramatists is both a witness to the work of the Holy Spirit, and a powerful reminder to those inside and outside the Church, that Christ is Lord of the mind. Nevertheless, there is need for us to seek a more complete understanding of our belief that 'the earth is the Lord's and the fulness thereof'.

VII

There is a true sense in which every one of the many topics with which the Conference has dealt can be brought under the general heading of evangelism. The whole reason for the Church's existence is that it may proclaim the gospel and by the grace of God bring men and women into the Kingdom of God through obedience and discipleship to Christ. All its agencies and energies have this end in view. But within them are those which are specifically directed to reaching the unsaved who form so large a section of the community. The reluctance of men and women to expose themselves to the Gospel by attendance at church makes this a difficult question; nor, in spite of some encouragement, is there yet convincing evidence of a widespread revival of religion. There is, also, a recrudescence of some of the ancient faiths, often associated with nationalistic fervour, and threatening to put obstacles in the way of the Church's work. New methods and adventures in evangelism have not been wanting, and the Church must be on the alert to bring the Gospel home to the people. But the Conference is sure that the finest, best tempered and most certain instrument of evangelism is the whole company of the worshipping Church: men and women all truly committed to Christ, and by their work and witness, their walk, character and conversation, commending Him to all with

whom they come into contact. Moreover, the impulse of evangelism is not limited to the Church's immediate surroundings. It reaches out to the ends of the earth. It was one of the glories of early Methodism that it believed in a universal Gospel, and sent out men and women as Christ's messengers. That world-wide evangelism is as yet far from completion, and the rise of new nations and new philosophies creates a problem more difficult and complicated than the Church has previously faced, and with it an opportunity equally unparalleled. There is the greatest need for the rethinking of missionary strategy, and for devising new methods of cooperation. Most of all, there is a new call to dedication to Christ and His service for the bringing to God of all His lost children.

VIII

The complement to evangelism is Christian education, whether carried on at home, school, college, in Sunday Schools and Youth Organizations or elsewhere. The Conference reminds the Methodist people that the millions of children and young people meeting regularly in our Sunday Schools and Youth Organizations every week present our churches in many lands with a tremendous opportunity both for Christian education and evangelism. The Conference urges the Methodist Churches of every land to study how best children and young people may be nurtured in the faith of the Bible, expressed in worship, thought and practice; and to inspire Christian teachers and leaders of youth everywhere with a desire to commend Christ and the fullness of the Christian Gospel to those in their care. Nor is there any point in life at which Christian education comes to an end. It is one of the urgent tasks of the Church to train its adult members, often largely uninstructed, into an intelligent knowledge of the Bible and its revelance to a fully Christian understanding of the world in which they live, and the place of man in it. Believing the family to be the basic unit of society and of the Church, the Conference also stresses the importance of the establishment of Christian family life.

IX

The Conference affirms its conviction that the God-given unity of the Church is demanding in this time a fuller and fuller expression in such closer association as may be revealed to Christians of every denomination in the differing circumstances of the lands in which they live. It has heard with keen interest and deep gratitude to God of continued progress in the Church of South India, and of the plans for church union in several other parts of the world, and it prays that God will give success to every enterprise of unity attempted in His name.

X

The Conference recalls to the churches everywhere that note of dedication to the pursuit of holiness which was the distinctive mark of the early Methodists. If in those days, still more today is the demand

laid upon Christians, not only to think and work in their service of the present age, but most of all to be constant in prayer. The Conference therefore invites the people called Methodists to claim by faith and prayer that transformation of personal and social life which is offered by the full Gospel of Christ, our Lord.

NUCLEAR KNOWLEDGE AND CHRISTIAN RESPONSIBILITY

by PROFESSOR C. A. COULSON, F.R.S., PH.D., D.Sc.

A lecture delivered at the Ninth World Methodist Conference, September 5, 1956

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On 1 January 1954 the English *Manchester Guardian* introduced its readers to the New Year in these words: "this is the eighth year of the Atomic Age." In some subtle sense there was the underlying suspicion that perhaps B.C. and A. D. were no longer relevant as chronological guides—they had been superceded by A.A.! Now the atomic age means nuclear knowledge. And if there is any measure of truth in that suspicion that atomic energy has come to dominate mankind's thinking about the future, then there can be no further justification needed for our concern today with this new knowledge. The Christian abdicates his position if he refuses to face the implications of this strange and powerful influence, and leaves to others the answering of those fundamental questions which accompany it.

For there are great and searching questions that our generation has to answer. Many of us have scarcely begun to realize how vast and how tantalising they are. For myself, when I hear my friends lightly using that phrase "the atomic age," two pictures spring to my mind, and I find myself somehow fusing them into one. For me at least these two pictures begin to show the scale in which I must learn to think if I would do justice to these splendid scientific discoveries. The first of these pictures was on the front cover of the *Listener* for 13 March 1947, following a series of broadcasts arranged by the British Broadcasting Corporation under the title "The Atomic Era," and reprinted in this journal. We are now familiar enough with the mushroom pattern that the cloud takes up after an atomic explosion. But this particular picture was a composite one. In the foreground was Rodin's statute *Le Penseur*—the Thinker —a man of middle age sitting on a small rocky eminence with his chin resting on the palm of one of his hands and his elbow on his knees, deep in thought, wondering, and with slightly crouched shoulders that indicate uncertainty and bewilderment. Behind him, high up in the sky, was a dim cloud, and its shape was like the top of a giant mushroom. This is, as it were, the question mark, the symbolic form of the problems inescapable

in the atomic age. Then the other picture,—which I have in my study at home in Oxford—this is a photograph from the air on 12 July of last year. It shows nothing but the twinkling lights from the streets and houses in the small town of Arco in the State of Idaho some 20 miles from one part of the Argonne National Laboratory for atomic energy research. The reason why this picture comes to my mind and thrills me is that for the first time, on that particular night, all the electric power for that small town was provided for a few short hours by atomic energy. This second picture is one kind of answer to the question posed by the first picture. It is not a complete answer, as we shall see in a moment, but it does at any rate suggest to us that when we think about nuclear knowledge, we have got to be prepared to face very profound and searching questions; and that when we get the answers to these questions, we shall begin to glimpse the possibility of almost undreamt achievement.

It may help at this stage if I outline the way in which our thought will go. I propose first to say just a little about what atomic energy really is, and the role that it must inevitably play in any civilization of the future. Then we shall be prepared to turn to the awkward questions of responsibility. We must ask in what way our responsibility for the right use of nuclear knowledge is different from our responsibility for the right use of any other scientific discovery. This will lead us to consider the responsibility which scientists themselves exhibit, and force us to recognize a specifically Christian element in it. I want to close by making some tentative suggestions for the right discharge of this responsibility.

First, then, what is this nuclear knowledge? In its simplest terms it is the discovery of a way of releasing energy from the central nucleus of an atom. If the atom is a heavy atom, like Uranium, we relase energy by splitting the nucleus into two approximately equal parts: if it is a light atom, like Hydrogen, we get our energy by fusing two or more of the nuclei together to form a composite heavier nucleus. In the first case we speak of nuclear fission—splitting a nucleus: in the second, of nuclear fusion—building a nucleus. Now it has been known for 30 years that each of these two processes would lead to the production of energy. But until 1938 no one knew how to control either of them. In the first reaction no one knew how to develop a continuous process, since the energy given out by one nucleus being split, while large on an atomic scale, is very small for ordinary purposes and we must therefore find some mechanism that will ensure the progressive fission of more and more nuclei. In the second reaction no one knew even how to start it on a commercial scale, since the temperatures required to do this are of the order of millions of degrees. The real significance of the 1938 discovery of Hahn and Meitner was that at last a way had been found to make the fission reaction self-sustaining. Under the appropriate conditions any one atom of Uranium, when it exploded into two parts, provid-

ed some additional neutrons which could act as triggers to set off explosions in yet other atoms. In this way huge numbers of atoms would be induced to split in quite a short time. If nothing were done to slow down the process, it would soon grow more and more ferocious, and we should be witnessing the explosion of an atomic bomb. But if—as is not very difficult—we slow it down, there has arisen the possibility of a controlled continuous supply of energy. This energy appears in the form of heat: it may be used to convert water into steam to drive dynamos and create electricity, as at Arco in July of last year; or there are other ways in which the energy, once it is made available, may be used to replace conventional sources of energy. It is remarkable how much energy lies waiting to be released in this manner. For example, one single pound of Uranium when used as nuclear fuel, is equivalent to 1,300 tons of coal. Quite evidently we have entered an almost new world, where the scale of things has been changed.

I am reminded of the American Henry Adams* who visited the Great Paris Exposition in the summer of 1900, and described his reactions in a famous autobiography. This exposition was designed to celebrate the arrival of the 20th century, a time of optimism and confidence as the world entered a Golden Age of science and industry. Adams was searching for what he called a 'dynamics of history' that would anticipate the changing course of mankind. And he thought he had found it in the Gallery of Machinery. He tells of radium and X-rays, of "frozen air" and the dynamo. And then, in a prophetic paragraph he writes of the New American words that could be applied to any citizen of an industrialized community.

"This child of incalculable coal power, chemical power, electrical power and radiating energy, as well as new forces yet undetermined—will be a sort of God compared with any former creation of Nature. At the rate of progress since 1800, every American who lives into the year 2000 will know how to control unlimited power. He will think in complexities unimaginable to an earlier mind. He will deal with problems altogether beyond the range of earlier society."

The dream of Henry Adams has become true, fifty years earlier than he anticipated. And we live in that world.

At first sight it may seem odd that I should refer to the possession of large amounts of energy as if it were one of the really great issues in modern civilization. Yet it is: and it may help us to see more of the full implications of the atomic age if, following the President (the Indian physicist, Professor Bhabha) at the 1955 United Nations conference on the peaceful uses of atomic energy, I give an abbreviated history of the world's civilization. In such an account I shall describe it as consisting of three phases of epochs, of which our nuclear age is the third. The first phase was the phase of man's unaided efforts in his relationship with the natural order. By the

*This illustration is largely taken from an article "Science and the educated man," by J. A. Stratton in *Physics Today*, 9, 17, 1956.

sweat of his brow man, having been thrown out of the Garden of Eden, (whatever interpretation one may like to put on that story), had to till and cultivate the ground. It is quite a simple matter to show that by the sweat of his own brow a man can at best cultivate enough ground to make possible the support of about 1½ people. That was why practically everybody was an agricultural worker, why the whole occupation of the human race was necessary agrarian, why such culture as there was was restricted to an extremely small minority, and why for every one of the poets who wrote in Ancient Greece there were some hundreds of slaves. But that phase changed. It did not change suddenly—but over a period of time man began to acquire control over the elements, or perhaps more precisely, over such things as coal and oil—the fossil fuels, as we may call them. This transformed, or at any rate allowed the transformation, of his way of life because it enabled one man by himself to do the work which many people had done before. The second phase therefore is the phase of mechanization. Quiet certainly it did make possible the education and culture of the human race. No longer was it necessary to have everyone working on the land. They would be spared to have education. Without something of that kind our civilization could never have grown to be what it is. No one denies that it has plenty of failings but nevertheless it is a vast improvement upon the first phase. We are passing out of that stage now and the atomic age stands for the third phase of human development.

It is not difficult to see that almost the whole of this development from one phase to another is bound up with the availability of energy; and it is precisely here that one aspect of our Christian responsibility begins to obtrude itself. I have spoken of how, in the first phase of development, man, unaided and alone, could do little more than support himself, with constant anxiety and fear as his companions. Our Old Testament is full of such situations. With the exception of certain South Sea islands, where Nature seems to provide for man's needs without much human effort, this situation was world-wide and universal. I have also spoken of how, in the second phase, now aided by the discovery of oil and coal, he could construct a mechanized age like our own. But this situation is not world-wide and universal: it is local to those communities, particularly in Western Europe and North America, where, largely as a result of Christian inspiration, an industrial society has been constructed. In other parts of the world, there is the same shortage of power, that can be harnessed for men's needs.

Let me illustrate this in terms of a comparison of the total consumption of energy per head per year in different communities. If we add together all the electric power, wind power, oil and petrol and coal power, used in the United States, we can express our result by saying that on the average, an amount equal to that provided by about 9 tons of coal per head is

needed each year. In Britain the figure is a little, but not much less. This is one of the touchstones by which we may judge the development of a community. For without this fuel our factories could not work, our buses and our cars could not move, and our homes would be cold and dark. We should be back in the Middle Ages. But compare this figure of 9 tons with that in present-day India and China, where it is about 5 cwt. or less. This gap, with a ratio of about 40 to 1, shows what is implied by the phrase 'undeveloped countries'. It is perhaps interesting to interpolate here that, as Bishop Oxnam said in his opening sermon at the World Council of Churches conference at Evanston in 1954, the average income in the U.S.A. is about 1500 dollars a year, to be compared with that in India, which is a mere 25 dollars a year. There is roughly the same disparity here—a factor of about 50—which we have already seen in terms of the use of power. And we know that such disparities as these will no longer be tolerated. India and China quite naturally desire that their teeming millions shall have the advantages that we in the West have. No wonder that there are revolutions in the world. It would indeed be strange if, with communications and knowledge as widespread as they are today, those two-thirds of the world's population which are thus underprivileged, did not revolt. I make so bold myself as to say that, if I were living in many parts of Eastern Europe or in India or in China, I believe, that, Christian as I am, I should find it hard not to join myself with the revolutionary forces there. This is not to justify much of what goes on in these groups: but it is to say that before we let slip the word of condemnation that falls so easily from our lips, we should do well to recognize what lies behind the tumult of our time. It should cause us no surprise that almost the first planning in the new India was an atomic energy scheme, poor as India undoubtedly is.

But the situation, in any long term view, is really much more striking even than this. For the world population is rapidly increasing. Some 80,000 additional mouths have to be fed every day. Most of this prodigious increase takes place just in those places where civilization is least developed. If the increase continues, as it seems almost certain to do, and if the undeveloped countries attain a comparable standard of living with our own, then the demand for energy will become terrific. We are now using power ten times as fast as we were a hundred years ago; but such is likely to be the rate of increase in demand that it is estimated that in another fifty years we shall need twenty times as much each year as now. Where can so great a supply be found? Not in oil, which, even if new sources are discovered by the geologist, can make only a trivial contribution: nor in coal, where the world's reserves will not last another hundred years if consumed at such a rate as this. There simply is no practicable alternative that can be visualized at this moment other than nuclear power. The only other reasonable source

would be the energy in the sun's radiation. This, if only we could tap it, is ample for all our needs, being some 30,000 times as much as we are likely to want now. But despite considerable efforts, we have not found any effective way of using this radiation. It seems therefore that the world cannot develop its backward areas, and even the developed areas will go into an inevitable decline, without nuclear energy. Well might Professor Bhabha say. "For the full industrialization of under-developed countries, for the continuance of our civilization, and its further development, atomic energy is not merely an aid; it is an absolute necessity."

One conclusion seems to me quite inescapable. If we believe that it is God's will that His children everywhere should enjoy the benefits of civilization, then we are committed to a fair and reasonable distribution of atomic energy. There are those who will argue that God is not concerned with these things. I shall reply that a pietistic attitude of that kind emasculates the Christian life of its struggle for goodness, and does despite to God's beneficence in making a richer life possible for all men. It is a denial of the worthwhileness and the significance of the material order. It fails to do justice to the real meaning of the Incarnation. Christians more than all others must be involved in these matters, if they are to be truly Christian.

But of course it would be a mistaken to suppose that the necessary adjustments will be easy to make. It may be true, as I have claimed, that our second phase of human life would be doomed if there were no third phase into which we could move. Atomic energy has arrived only just in time to save civilization from the biggest collapse that we could imagine. But we are not going to get atomic energy in six months: the photograph of Arco lit by atomic power will be an exception rather than a rule for several decades. Eventually we shall get atomic power, but it would be sheer foolishness to suppose that we can get it without passing through a very difficult intermediate period. We have got to be prepared to forego a good deal in order to build up atomic energy plants; not for ourselves only—that will never give us peace—but for the whole world.

The first kind of atomic energy will come from the same type of mechanism that gave us the atomic explosions on Japan, that is, from the use of Uranium and Thorium. But the supplies of these are limited, and the atomic age will not have finally solved its power problem until we have learnt to harness not only the fission of the heavy elements, but the fusion of the light ones. We have simply got to learn to control the Hydrogen fusion reaction—the same process that takes place within the sun, and is responsible for its heat and its light. It may be, therefore, that those things which leaked out into the press a few weeks age, are destined to be the most significant single item of news that has ever leaked out anywhere: I am referring to the somewhat guarded statement that the people working on these matters have discov-

ered how to use Hydrogen in one of its possible forms, and from it to make Helium. The reason why such a discovery would be so important is that when the process has been perfected, there will then be no further shortage of fuel, because so long as human life persists there will be adequate supplies of Hydrogen. It is singularly fortunate for us that Hydrogen is easily the most common of all the various elements of which our universe is constructed. But the use of Hydrogen in this way really belongs to the future, probably to the distant future. In the immediate present there is going to be a great competitive scramble for such Uranium as there is. There is plenty of signs of that scramble already. I said earlier that the atomic age would be exciting, and I believe that situations of the kind I have just been describing show that my claim is correct. For those who can come to the future with real elasticity of mind, this type of problem will be most stimulating and creative. Dealing with them is going to make life for our children immensely thrilling—full of glorious opportunities and of course at the same time magnificent dangers. We are all of us going to have to pass through a pretty searching experience before we can say that any of us is fit to live in the atomic age.

And now, having briefly described the role of nuclear energy in the future, we must turn to a more specific consideration of responsibility. First, then, is our responsibility for the right use of atomic energy different from our responsibility for the right use of any other scientific discovery? For the Christian, I do not see how the answer to this question can be other than 'no', since he must always see every action in the light of God's intention. If you live *sub specie aeternitatis,* then the right use of nuclear power is equally as significant a responsibility as the right use of money, or of time. But for the non-Christian, with whom, as Niebuhr continually reminds us, the Christian has to work in some sort of human compromise in nearly every sphere of human activity, the answer may be 'yes'. For not only does the advent of nuclear power open for us the gates of new life; it equally well provides us with a destructive power vastly exceeding any thing previously known. Here is the great tension—the close proximity of good and evil. In Winston Churchill's phrase we have to learn to 'tread the rim of Hell'. For in its more refined form of nuclear fusion, the Hydrogen bomb may be used to obliterate instead of to build up. It is fairly widely agreed now that both Russia and the United States have a stockpile of nuclear weapons adequate to destroy practically all large communities everywhere in the world, and such that the poisonous remains from their explosion would kill almost all life of every kind, which managed somehow to escape direct death. We have learnt a lot about radiostrontium recently, and of the manner in which it accumulates in the bones of a man, and then destroys him through anaemia; and of the way in which it may be absorbed into the soil, be built up into the growing plant, eaten

by cattle and thus transferred to man; with such knowledge as this, none of us can feel very easy about the future. The human race has now got to learn to live in the shadow of that mushroom cloud so well expressed in the first picture that I described in this address. Here surely the Christian has something to say, some responsibility to discharge, to his fellows, Christian and non-Christian alike. For we know that this close companionship of wretchedness and greatness, fear and love, pity and hate, Heaven and Hell, is of the very essence of God's creative purpose. Our warfare is not against flesh and blood, but against principalities and powers, and against the rulers of the darkness of this world. If it be true, in A. N. Whitehead's phrase, that the Kingdom of God is not so much the isolation of good from evil, but the overcoming of evil by good, then the Christian can look at those grave and sometimes terrifying prospects which I have been describing, and he can say: 'You need not fear. For the possibility of nuclear knowledge is a sign of God's providence, and our winning of this knowledge is a gift of God, as though He would treat us no longer as spiritual babes, but as full-grown men and women. Here in this very crisis, is the material of victory, God's victory in us'. The Stoic might begin to talk like that, but only the Christian, who has companied with death, and found God deep in Hell, can really speak with conviction.

And the world needs this sort of word. Scientists need it also. For they know the dangers and frequently recoil even from what they have achieved. It was a scientist who, when writing about atomic fission, used these sentences: "There is one group, and that an important one, which seems to be deeply stirred. These are the scientists. Rightly or wrongly, they feel responsible for the atomic bomb." And Einstein himself, in a conversation shortly before the end of his life, when talking to a friend about the dangers to civilization that followed our nuclear knowledge, said: "I made one great mistake when I signed the letter to President Roosevelt recommending that atomic bombs be made." But perhaps the clearest expression of this guilt-complex comes from Professor J. R. Oppenheimer, who was as much involved as anyone in the devising of the bombs that fell over Japan. "In some sort of crude sense, which no vulgarity, no humour, no overstatement can quite extinguish, the physicists have known sin; and this is a knowledge which they cannot lose." I do most profoundly believe that this is true, and am deeply grieved that somehow or other the Church seems to have let slip its chance of "speaking to their condition"—which assuredly it could do, since it too knows these things. As Dr. George MacLeod put it in a recent debate at the General Assembly of the Church of Scotland:

> "Surely in such a plight the only people left are the people of God. For only they know the secret and significance of the grave. They alone know the paradoxical possibilities of resurrection. Only the Church of Jesus Christ can now release our world."

There is another aspect of this

responsibility for nuclear knowledge which may lead the non-Christian to think of it more seriously than he is accustomed to think of other responsibilities. I am referring to the genetical dangers associated with atomic explosions. Here the essentials may be very briefly put, even though our detailed knowledge of certain numerical magnitudes is still not as full as we should like. It is universally agreed that a large part of our physical and mental characteristics, such as height, color of hair, resistance to disease, are almost wholly determined by hereditary factors. These are found in the chromosomes of every living cell; and in the combination of male and female cells which leads to fertilization and the birth of a child, both parents contribute equally. It is almost universally agreed that the chromosomes hold their hereditary influences in a series of genes, each of which governs one or more characteristic features. There are about 10 - 20,000 distinct genes in a human chromosome. From time to time one or more of these genes may be modified—we say that a mutation has occured. Most modifications are unfavourable, and lead to a lowering of the genetic stock. A few are favourable and, if reproduced in the next generation (as they almost always are) they may become one of the chief operative agencies in the whole evolutionary process. Expert geneticists, however, have shown convincingly that, despite this possible advantage, it is highly dangerous to have a large number of mutations occuring in a short space of time. Now a certain number of mutations are always occuring naturally—cosmic radiation, about which we can do effectively nothing, is one of the most potent causes of them—and we can increase the rate of mutations artificially, by the use of certain chemicals (e.g. mustard gas) or by increasing the amount of radioactive radiation in the atmosphere. It is this latter possibility which has recently become very disturbing. For every time that we explode an atomic bomb, we increase the amount of this background radiation. In some parts of the world the background is already doubled. Occasionally a large increase may occur rapidly. Thus, after a single bomb explosion in Nevada, rain which fell on the cities of Albany and Troy added to every person there one-hundreth part of the total dosage which the pathologists warn us is dangerous. This radiation dies away very slowly, so that we are accumulating more and more radidation effects as long as we live. Every explosion adds to this: and since much of the products of an explosion is in the form of tiny dust particles, which go high into the atmosphere and very gradually settle on the earth almost universally, this danger cannot be localized. The increase in background radiation in Britain and in Russia is less, but not vastly less, than in the United States. If we are not careful, we may do quite irreparable genetic damage. Even now, Professor Muller and others have estimated that within the next three generations we shall already have maimed or destroyed some 30,000 human beings: and

the maximum effect due to explosions that have already occurred will not be experienced until something like the tenth generation. This figure is probably conservative. Thus Professor J. B. S. Haldane has calculated that the amount of radiation already received

"would be responsible for nearly half a million deaths, of which perhaps 15,000 would be amongst descendants of the people of Britain. Calculations suggest that a few hundred of these extra deaths will occur in the next generation. The frequency will then fall off, but begin to rise again in a century or so, when marriages between cousins descended from the same person alive today will become common. About half the deaths will take place in the next 5,000 years, but some may be put off for 100,000 years. But many of these would probably be deaths in early embryonic life, not even causing a painful miscarriage. And the actual number of deaths shortly before birth, at birth, or in early youth, might be as few as 50,000, or even less."

Even if too great a reliance may not be put on any detailed figures of this sort, we are here building up a legacy for the future, which, if we continue as we are at present contemplating, will cause our descendants to rise up in wrath against us, and condemn us. If the sins of the parents are thus to be visited upon the third and fourth generation, then it is surely time that someone cried: halt. It is probably true that in the long view of history, not a great deal of harm has been done—though 30,000 damaged or destroyed human lives can never be wholly disregarded —but it does seem to me that we, as Christians, have a solemn responsibility to act, in the Quaker phrase, "for the unborn generations." For the Christian does not live entirely in the present: in some sense he looks out upon the whole panorama of time: and his responsibilities accompany his gaze.

And now, having mentioned the atomic bomb, I must say a little more about it. I realize, of course, how divided the whole world is on this issue. But I am impressed by the fact that shortly before the first two bombs were dropped on Japan, most of the top-level scientists who were working on it secretly, wrote to the American President urging that the bomb be not dropped on a city, but in some adjacent area, such as Tokyo Bay, where its effects could be recognized without the destruction of life that took place at Nagasaki and Hiroshima.* President Truman, in his autobiography, makes it clear that it was not the scientists but the President, who took final responsibility for the decision. Now, however good a man's intentions, and however much we may admire him in other ways, I am sure that should never permit such a decision to be made like this by one man. And I think that, as Christians, we should make

*In more detail: (a) the physicist Professor James Franck, on behalf of almost all the major scientists involved in the production of the bomb, in June 1945—a whole month before the first atomic bomb had been exploded—sent a memorandum to the Minister of Foreign Affairs, Stimson, in which they pointed out the political and other consequences of dropping the bomb on Japanese towns. This memorandum strongly urged against any such action. (b) In March 1945 Professor Szilard, who in 1939 had shared with Einstein in advising Roosevelt of the possibility of building an atom bomb, submitted a similar sort of manuscript as in (a) direct to the President. Both documents (a) and (b) have been published.

this clear. For there is something almost unspeakable about the effects of such a bomb. Group Captain Cheshire was one of the two British observers at the bombing of Nagasaki. This is how he described† his reaction to the dropping:

"When Wilhelmshaven blew up we felt a sense of elation. We had set out to destroy, and we had destroyed. When Nagasaki blew up, we felt nothing but an overwhelming sense of awe, not because an unusual number of Japanese had been killed, but because something had happened which altered our fundamental concepts of life."

It is not for me here to argue the case either for or against Christian pacifism—though I must confess that I speak as one who himself became a pacifist at the same moment that he really became a Christian—but I am quite sure that until we have sorted out the muddle in our minds about the use of atomic bombs, we shall have failed in our responsibility to our generation.

Scientists t h e m s e l v e s have shown their awareness of the responsibilities that attach to our present nuclear knowledge. There is at present a lively discussion going on among them regarding the possible introduction of some sort of pledge similar to the Hippocratic oath for doctors. But it seems to me that scientists alone can never carry through such a project. They need the buttressing and the power that we can give them. Here, for example*, is the tentative wording of such a Hipprocratic oath for scientists:

"Realizing that my scientific knowledge provides me with increased power over the forces of nature, I pledge myself to use this knowledge and power solely to what, according to my ability and judgment, I consider to be for the benefit of mankind, and to abstain from any scientific activity known to me to be intended for harmful purposes."

This is very brave, but it is inadequate. For it is earthbound. An oath of this kind must be lifted up beyond "my ability and judgment" before it can be really effective. If it gets no further than this, I do not see how it excludes such (to us) vicious practices as Hitler's doctors sponsored in German concentration camps. For as a result of these practices we learnt a lot more than we could easily have learnt by conventional means about the powers of resistance and recuperation of the human body. Yet the whole civilized world revolts from such behaviour, and when certain of the records were subsequently found, I am told that they were destroyed. We cannot abdicate our responsibility here, and leave it to the scientists, splendid as their tradition most undoubtedly is. The little limerick:

There was a young girl from a Mission
Who was seized by a dreadful suspicion
That original sin
Didn't matter a pin
In the era of nuclear fission,

describes a wholly unnecessary fear on the young girl's part. The great and searching questions bound up with our nuclear knowledge admit of no easy solutions, certainly of none that are not deeply religious.

†From "Cheshire, V. C." by Russell Bradon, published by Evans.

*Dr. R. Further of London, in Atomic Scientists Journal, January 1956.

The fact that our responsibility has this religious root is of first-rate importance. Failure to recognize it is one of the most potent reasons for the distrust in which scientists are often held—as if they, and they alone, were responsible for opening Pandora's Box, and releasing upon an innocent world all the evils therein. There seem to me to be two main grounds for asserting the religious nature of our responsibility. The first is concerned with the nature of man; the second with our relationship of the material world. Let us consider them in turn.

In the film "Three, two, one,—zero" recently made in America by the National Broadcasting Company, and, as its title implies, concerned with atomic problems, there occur these words:

> "It is the people . . . who must come to know what atomic energy can and will do, for good and evil. . . . . The real problem does not rest in scientific mechanisms, but rather it rests in the minds and hearts of men."

There is more than an echo here of some words from the preamble to UNESCO: "Since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed." It is another way of saying that there are certain questions, not of a scientific character, which must be answered before we know how to use science properly. Many things will undoubtedly be altered in the atomic age, but some of the fundamental questions still remain. The psalmist considered the Heavens, and the moon and stars, and then he cried out, 'What is man that Thou are mindful of him?' But that was in the year 1000 B. C. Today we think of civilization and its need for energy, of atomic bombs and genetic damage, but we still cry out 'What is Man?' I was reminded of this recently when I heard from the Bishop of Bristol of an incident that he witnessed on a London tram (or as you in America would call it, a street car!) a few years ago. On this particular occasion he was sitting in one of these trams, and next to him there was a mother and her small boy. At one of the stopping places there got on a city gentleman, complete with pin-stripe trousers, tightly-rolled umbrella, bowler hat and spats. The child eyes this new arrival very suspiciously for a few moments and then, in that tone of voice that children reserve for specially important occasions, said, "What's that man for, mummie?" This is a question that belongs to every phase of human development; it is as old as man himself, and will be with us till the end of time. Without some understanding of its answer, we shall never know how to use the knowledge of good and evil represented in the atom, as it should be used. The revelation of God in Jesus Christ and among His Saints seems to me the only sure ground here on which we may tread. Only in the light of that revelation of God do we see the true nature of man, as a child of God, and begin to see how to deal with the moral and ethical problems raised by science. The moral nature of many of our problems, and particularly those connected with nuclear knowl-

edge, is becoming widely recognized by scientists. What is not so widely admitted is the relevance of the Christian faith; and this is due partly to ignorance of the faith itself, partly also to our failure to expound it meaningfully.

Let me illustrate this by quoting some paragraphs from the editorial columns of the scientific weekly *Nature*. This journal is one of the most widely read of all scientific journals. In it all types of scientists expect to see short accounts of important new discoveries, and comments on all matters of scientific interest. Now it is very significant that over the last few years these columns, written by scientists for scientists, have been increasingly filled with correspondence reflecting the uncertainty which most of us feel about the implications of our new knowledge, and the new kind of life which opens up before us. In the sentences which follow, the editor is reflecting on some of the grave and urgent questions which lurk behind every contact between the developed and the underdeveloped countries of the world—questions such as the provision and use of nuclear power, and the problem of population increase: and then he goes on:

"There will be a price demanded in individual self-control as in that of communities, and it is not on education alone that we can rely to make sure that the price can be paid. Whether in fact the nations and the communities of which a nation is made up will pay that price and relinquish the prejudices and customs which endanger the effective utilisation and uniform distribution of the resources of the world will not depend solely on whether an adequate supply of scientists, technologists and technicians is forthcoming, nor on a clearer comprehension on the part of the population of what science is and how it works. The problem of relating action to knowledge and not to prejudice is a moral issue, in the sense that only a worthy view of man can compel the action, and induce men and women to accept the sacrifices which in one way or another will be demanded from the advanced, as well as from the underdeveloped countries of the world."

Now where shall a worthy view of man be found? Without it all man's science and his skill go rotten. With it there opens out a life of splendid fulfilment, of joy and hope and deepest satisfaction. A worthy view of man—this is the one great problem for the atomic age: its provision is one of the great contributions which we Christians can make to the world of the future.

This—the true nature of man—is the first ground for asserting the essentially religious implications of nuclear knowledge. The second ground is concerned with our relationship to the material world. The Christian faith asserts that the whole universe belongs to God —"the earth is the Lord's and all the fulness thereof." Such is the burden of the first chapter of Genesis: and in the New Testament we learn of God's will to "sum up all things in Christ, both things on earth and things in Heaven." The emphasis here is on things and not on people. We claim that the order of nature carries meaning, that the meaning may be discerned by anyone who looks in the right manner, and

that this meaning is bound up with the nature of God. There is a very real sense, therefore, in the claim that God will not be fully known until He is found in a developed knowledge of the universe in which we live; and that therefore all true scientific study is a religious activity. Old John Ray in the seventeenth century could call science 'a proper study for a Sabbath day.'

In all this the scientist is very close to the explorer. Younghusband has put it in these words:

"The human race will never be satisfied until it has completed its knowledge of its surroundings. We want to know everything about this planet, even its furthest confines, because we not only have to adapt ourselves to our surroundings, but in the true spirit of man we have to master them. And we cannot master them until we have full knowledge of them."

So far as the geographical explorer is concerned, this situation has largely (but of course not completely) happened. But his role has been taken over by the scientist. Even here great things have been found out and we have nearly full knowledge of many of them. Nuclear energy and its many ramifications represent the next big field of knowledge to be conquered. Bearing in mind what I have just said about the material quality of the Christian faith, I want to see all this new field claimed for Christ: Not in any naive manner, but as recognising that God's purposes of a full life for all His children cannot be fulfilled without it; and, no less, that in the search and the discovery some new facet of God's character and His Being will be revealed. A recent writer* has put this in somewhat similar words:

"The promise of atomic energy is tremendous, but it will not create a Utopia in which fingers need be lifted only to push buttons. Nor should we want it to. If ever we find an agency that will take all our burdens off humanity, civilization will disappear. In atomic energy lies the hope that man can work more effectively, with greater inspiration and in greater peace. With this new tool, and the sharpening of the wits and the imagination which its use will stimulate, he can go on into a rapidly widening circle of discovery. He has only begun to find out how to live with himself and his environment. The atom has more to give humanity by its inspiration than by its direct gift of emancipation from work."

We ourselves might put this conclusion in simpler terms if we said: "There is something of God in the blinding flash of an atomic bomb and the great pillar of fire ten miles wide. The nuclear scientist may be—and is—one of God's messengers, but he is a messenger of flaming fire." The words of the Welsh poet, the late Dylan Thomas, have a relevance here: "Oh, isn't life a terrible thing, thank God?" It most certainly is a terrible thing, if the Kingdoms of this earth are to become the Kingdoms of our God and His Christ. But we must also thank God for all the possibilities that nuclear knowledge has brought to help us in the task.

This brings me to the end of my exposition. However, I promised that before I finished, I would put

*David O. Woodbury, in *The Nation*, June 18th, 1955, p. 536.

forward some tentative proposals for the Christian attitude and the Christian response towards the responsibilities which I have been describing. After what I have already said, this can be done quite briefly.

First let me say that I believe that the Christian Church should publicly and openly condemn all use of large-scale bomb explosions. We know too little about possible evil effects to take any risks, and if, as almost every Ecumenical gathering has agreed, 'war is contrary to the mind of Jesus Christ,' there can surely be little doubt about this. Let us do it, not because it is a way to get peace—which it may or not be in present circumstances—but because it is an offence against the children of God to use a weapon of this type.

Next let us intensify our sharing of the power provided by peaceful uses of nuclear knowledge. We ought to rejoice at all offers of nuclear fuel by rich nations to poorer ones. Here the United States has a grand record, though even that could be bettered! Indeed we may regret that Britain and the United States delayed as long as they did, so that now there is a danger that giving nuclear fuel and nuclear know-how may become regarded as one more move in a political game. At all events we must avoid the unseemly rush to buy up all available sources of Uranium which has already started. Whatever happens the Uranium is not ours—the Christian will see it as God's.

We should rejoice that there has been clearance of so much nuclear knowledge. Here at least the issue should be clear to those of us who are Christians. Knowledge cannot be nationalised since it too is a gift of God. And as for nuclear knowledge, we should do well to remember that it is the combined work of many people in many countries that has led to the present situation. We are all debtors to Rutherford, a New Zealander, Joliot, a Frenchman, J. J. Thomson, a Briton, Hahn, a German, Kapitza, a Russian, Fermi, an Italian, Bohr, a Dane, Oppenheimer, an American, Bhabha, an India, as well to many others; to Einstein, a Jew, and Cockroft, a Christian; to Madame Curie, a woman, and Becquerel, a man. It was Thomas a Kempis who warned us against taking too much credit for anything we ourselves may have learnt: "Be not therefore exalted in thine own mind for any art or science which thou knowest, but rather let the knowledge given thee make thee more humble and cautious." We should therefore rejoice in the fact that now several other countries are designing atomic fuel plants: and instead of boasting (as one man I heard of the other day—a Christian too!) that ours are bigger and better than anyone else's, we ought to be thinking of how we could launch out in some great scheme to provide energy for all the less developed peoples of the world. Here indeed is a crusade in which all the nations of the world could unite. To be dominated by some really great enterprise, whose importance is recognised by all involved, is one of the surest ways to mutual under-

standing and fellowship. I should like the United Nations to discuss where new atomic stations should best be built, and how they might most easily be financed, a major share being taken by Britain and the United States. Why must Arco and Windscale in northern England be the first places to have nuclear power? I don't think that anyone yet knows the right answer to questions such as these. But I believe that a project of this kind on a world scale would do far more to establish good relations and ensure peace than interminable argument about the control of fissile material. For peace is a fruit, and fruit grows on a tree best when the tree is not too closely pruned by a crowd of rival gardeners!

There is much even now that can be done. And so let us dream great dreams. Let us imagine the use of atomic power to evaporate sea water, and transport it to irrigate central Australia; nothing else can do this. Let us imagine it blasting a way through ranges of mountains to water the arid parts of western United States, so that the desert blossoms as the rose. Let us imagine it changing the climate of Siberia.

Much the same holds good in the biological sphere. For those very mutations whose existence in human genes is a cause of so much concern in nuclear explosions, can be used to great advantage in agriculture. Cereals, when bombarded by neutrons in an atomic pile, experience mutations, in large numbers. Most of these mutations are useless and actually weaken the stock; but a few are good. We can select these and so improve the stock; we can introduce new varieties altogether. Even now, in Britain, wheat, barley and oats have been treated; in America a fungus-free oat has already been produced; in Sweden the most widely grown variety of white mustard has been obtained in such a way. Let us look to the time when we harvest crops beyond the Arctic Circle, and our control of biological techniques enables us to grow in each part of the world that which best fits there. Nothing less than this can cope with the rising world population, and its demand for food.

In all this nuclear knowledge seems to me to be a great gift of God, far more effective than previous techniques, such as the crossing of varieties; since thousands of experiments may be made at the same time, and we have far greater possibilities at our disposal than any older agricultural research worker could hope to possess. Let us be proud to use this knowledge, and equally concerned to share it.

In the field of medicine we have an even more striking situation. It may help us to see the scale in which medicine has been altered if I remind you that although radium has been mined extensively for some fifty years, the total amount produced is about 10 pounds. The total stock used for medical purposes in Britain is about 5 ounces, and this is sufficient to treat several thousands of patients every year. Compare this situation with that which arises when we burn one single pound of Uranium in a nuclear reactor;

the fission products so produced have a long-lived radioactivity equivalent to about half a ton of radium! With such such enormous possibilities it is not surprising that great strides have been made —and more are to follow. I believe that I am right in saying that in the last twenty years fundamental medicine has learnt as much as in the previous 200 years. The effects of all this, not merely in treating cancer, but in a thousand other ways, are just beginning to appear in ordinary medical practice. I am proud that we in Britain have a good record here, though this too could be improved. In 1954 some 15,000 parcels of radio-isotopes (almost all for medical purposes) were produced, and no less than 5000 were sent abroad to all parts of the world. Let us rejoice again in the possibilities that all this raises for the curing of disease and the health of God's children in parts of the world where disease is rampant and health poor; and let us see that no one makes personal profit out of it to the detriment of its world-wide distribution. Bearing in mind what has happened with certain important drugs, there is need to take care.

You will see from what I have just said that I am profoundly grateful for our nuclear knowledge. This is not the fruit of some forbidden tree whose mortal taste must bring death and destruction into our world. Yet many people are afraid. The distinguished chemist J. B. Conant of Harvard, in a recent series of lectures, now printed, said "I'm afraid" of the future uses of atomic energy. Bertrand Russell said in a recent broadcast: "I have found that the men who know most are the most gloomy." Surely this need not be.

There is the danger, of course, which Henry Adams foresaw in my earlier quotation from his autobiography, that nuclear man would be a sort of God, compared with pre-nuclear man, because of the power and the complexities of life with which he could now deal. This is a real enough danger, and some have urged that we should stop all such research and development in order to escape it. I am sure that such a policy would be a grievous sin; it would fortunately also be impossible of achievement. Leonardo da Vinci could design a submarine, and keep it from th public: "This I do not . . . divulge on account of the evil nature of men, who would practice assassinations at the bottom of the seas, by breaking the ships in their lowest parts and sinking them together with the crews who are in them." And Napier, the inventor of logarithms in the sixteenth cntury, could refuse to divulge the nature of a weapon that he had developed, and Boyle the chemist of the seventeenth century could refuse to publish the ingredients of some poisons and a means of making ink invisible, as being 'mischievous.' But we can do nothing of this sort, and have to learn to live with the danger and the hope of nuclear knowledge. I remember how God said to Moses, as the children of Israel came near the end of their wandering journey: "Go ye in and possess the land." This is our call too. For He gave us this land, just as surely as He gave the land of Canaan to

those early wanderers; and if we are brave enough and sensible and clear-minded enough to interpret His will in our new circumstances, we may discover that this Promised Land is rich with joy and fulfillment for all mankind. Only in that spirit can we hope to avoid the dangers and the temptation to unworthy ends.

On July 18, 1955, at West Multon, New York, Mr. Lewis L. Strauss closed a giant two-way copper electric switch. Pushed one way it could start an atomic submarine propulsion unit moving; pushed the other way it could supply the first commercially available atomic power. "This switch," Strauss remarked, "is a symbol of the great dilemma of our times. I throw it now to the side of the peaceful atom and by that choice we mark the beginning of the scriptural injunction of Isaiah: 'They shall beat their swords into ploughshares and their spears into pruning hooks'." I do not know whether Mr. Strauss, as he pressed that switch, thought of some earlier words of Pasteur, but they would have fitted very well with what he himself said.

"Two opposing laws seem to me now in contest. The one a law of blood and death, opening out each new day new modes of destruction, forces nations to be always ready for battle. The other, a law of peace, work and health, whose only aim is to deliver Man from the calamities that beset him. . . . which of these two laws will prevail. God alone knows. But of this we may be sure, that science, in obeying the laws of humanity, will always labor to enlarge the frontiers of life."

I wish that I could be as sure of this conclusion as Pasteur was. But of this one thing I am absolutely certain. It is our solemn Christian responsibility to see that the right law does prevail. For only 'laws of humanity' which are truly binding are the laws of God and His Christ.

CONSTITUTION OF THE WORLD METHODIST COUNCIL

As finally adopted at Lake Junaluska, North Carolina, U.S.A., on September 8, 1956.

I. Name and Purpose

1. The name of this organization shall be the World Methodist Council.

2. It shall federate the various Methodist churches and groups throughout the world; develop closer unity among them; provide contacts between the various groups; arrange exchanges of preachers; advise its constituent churches on union and other matters; disseminate information by publication and otherwise concerning Methodism; maintain headquarters for its activities; and do any and all other things necessary to the promotion of World Methodism and its effective witness within the universal church of Jesus Christ.

II. How Constituted

1. The World Methodist Councill shall be a federation composed of Sections representing the Methodist Churches of the world. It shall determine the arrangement of the Sections and the number of members allocated to each, provided that at least one-fourth of those elected at any meeting shall be new members.

2. Each Section shall be composed of the number of members designated by the Council and all such members shall be members of the World Methodist Council.

3. The members shall be elected by the World Methodist Conference on nomination of the Sections of the Conference. They shall be subject to confirmation or substitution by the churches which they represent according to the usual method of such churches, but they shall exercise the duties of membership until they are thus confirmed, changed, or rejected.

4. The members of each Section may name any officers and committees desired, and these shall function only for the Section.

III. Meeting

1. The World Methodist Council shall meet at such times as it or the Executive Committee considers desirable, but at least once in each five-year period.

2. The place of meeting shall be determined by the Council or the Executive Committee. The meetings shall be held in the main centers of Methodist work throughout the world, which shall be selected in the light of accessibility, travel cost, and the probability of a representative attendance.

IV. World Methodist Conference

1. The World Methodist Council shall convene a World Methodist Conference at such times and places as the Council or Executive Committee considers desirable, but at least once in each ten-year period.

2. The Conference shall be composed of all the members of the World Methodist Council, and of all Officers of the Committees of the World Methodist Council, and of certain delegates and accredited visitors appointed by the Sections in the ratio determined by the Council or Executive Committee.

V. Relationships

1. The World Methodist Council shall be the legal and authoritative body responsible for the executive and administrative affairs of the whole organization.

2. The World Methodist Conference shall be an advisory body providing at its meetings a more representative group of Methodists from the various Sections. Its duties shall be mainly educational, inspirational, and fraternal in nature.

3. All matters of an administrative or executive nature shall be settled by vote of the World Methodist Council. The World Methodist Conference shall have the right to vote on all matters submitted to it by the Council.

VI. Officers

1. The officers of the World Methodist Council shall be a President and one or more Vice Presidents elected by the Council, and a Treasurer or Treasurers, and a

Permanent Secretariat elected by the Executive Committee.

2. The duties of the President, Vice Presidents, and Treasurers shall be those usually performed by such officers.

3. The Permanent Secretariat shall be composed of a Secretary or Secretaries who shall be the executive officers of the World Methodist Council, carry on its correspondence, maintain its headquarters, edit and publish its documents, keep the minutes of its meetings and the meetings of the Executive Committee, and perform all the duties of administrative and executive officers.

4. The President and Vice Presidents shall hold office for a period of five years, or from the close of the Council meeting which elected them to the close of the Council meeting next following. They shall not be elibible for re-election. A retiring President shall be a member of the Council and the Executive Committee as Past President for a further period of five years.

VII. Executive Committee

1. There shall be an Executive Committee which shall exercise all the functions of the World Methodist Council and the World Methodist Conference in the interim between the meetings of these larger bodies, including the electing of a president or vice president in case between meetings of the World Methodist Council a vacancy should occur.

2. The Executive Committee shall be elected by the Council at each meeting. It shall be composed of the officers of the Council and such other members as the Council shall determine.

3. The Executive Committee shall meet annually if practicable at such times and places as it may determine and preferably at places where the Council or Conference is not expected to meet. It may determine matters relating to the program and finances of its meetings and may invite non-members for particular purposes. In case of unavoidable absences substitutes may be designated for specified meetings by the Sections which the absentees represent.

4. During the interval between meetings of the Council the Executive Committee may fill temporary vacancies in its membership after consultation with the Sections involved.

VIII. Other Committees

1. There shall be a Committee on Exchange of Preachers which shall be constituted by the Council on the basis of nominations from Sections IX (Great Britain and XIII (The Methodist Church, U.S.A.), and from such other Sections as shall come to share in the exchange from time to time. Its duties shall be to arrange temporary exchanges of preachers between the constituent churches of the World Methodist Council. It shall have co-secretaries in such countries as may be determined by itself, and they shall maintain contact with and report to the Secretaries and the Executive Committee.

2. There may be other committees similarly appointed as the Council may determine. The Council may provide for the mem-

bership and structure of such committees, define their duties, receive their reports, and direct their activities.

IX. Departments and Affiliates

1. The World Methodist Council may create Departments for its own work and may prescribe their duties.

2. It may also accept other bodies as affiliated organizations on such terms as may be mutually acceptable.

X. Amendments

This Constitution may be amended by the vote of three-fourths of the members of the World Methodist Council present and voting at any meeting, provided the amendments have been considered by the Executive Committee.

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